out, for any one who will compare the older cuts with the later, and especially with the reproductions of Hirschfeldt's plates from Sappey, will be struck with the great improvements thus effected. If Mr. Heath's plan with numerical reference marks were followed, of having all the odd numbers in succession on one side, and the even ones on the other, it would also be a great improvement.

Moreover we object to "highly magnified," "much magnified," and similar terms so often employed in the explanation of the cuts. Where they are borrowed it is often perhaps unavoidable, but in original cuts such indefinite terms are always to be avoided; the precise power used should be stated. In no other way can exact knowledge be imparted.

We do not like the plan of separate indexes for each volume, and; moreover, they are not as full as they should be, but when we compare them with French works we are satisfied. For accurate proof-reading we have never seen a better book; only three misprints are noted in the "errata," and in a pretty thorough examination of the text, we have not discovered a fourth. As to the text there is little to be said save in commendation. Any book nearing its decade of revisions has received the stamp of professional approval that would outweigh any criticism. We can especially commend the bibliography of recent literature, which is added to each part, as a most useful and valuable point. This is particularly full in the section on embryology. W. W. K.

ART. XXXII.—*Transfusion: Its History, Indications, and Modes of Application.* By CHAS. EGERTON JENNINGS, L.R.C.P. Lond., etc. With Engravings illustrating the Author's Siphon for Intravenous Injection and Immediate Transfusion, and a Bibliographical Index. 8vo. pp. viii. 69. London: Ballière, Tindall, and Cox, 1883.

THE introduction of this very interesting monograph opens in the following graphic and attractive way:—

> "Students, with smiling faces, are rapidly leaving the theatre of one of our metropolitan hospitals. The most brilliant operator of the day has just performed immediate transfusion with the greatest success. By means of a very beautiful instrument, the most complex and ingenious that modern science has as yet produced, a skilful surgeon has transfused half a pint, or perhaps a pint, of blood from a healthy individual to a fellow-creature profoundly collapsed from the effects of severe hemorrhage. Some little difficulty was experienced prior to the operation, as one of the many stopcocks of the transfusion apparatus was found to work stiffly; but this error was quickly rectified by a mechanic in attendance. Towards the close of the operation the blood-donor, a powerful and heavy young man, swooned. Two porters carried him into an adjoining room, his wounded arm being bandaged up, *secundum artem*, by energetic dressers. Diffusible stimuli were exhibited by the mouth, nostrils, rectum, and skin. The man rallied in due course, being well cared for by a group of students and nurses deputed to look after him. The wound in his arm will probably heal speedily, or a few weeks later he may possibly apply at the out-patient department of the hospital, presenting an ugly-looking, pulsatile tumour, associated with a thrill and rasping bruit, connected with the vessels in the cubital triangle, a most unfortunate accident having clearly happened here, of which a record promptly appears in the columns of the *Lancet*."

This account is followed by the narration of an imaginary case of *post-partum* hemorrhage, occurring under the care of a solitary practitioner in the country, where none of the conveniencies of the brilliant operation are at hand, and where disappointment and discredit are the consequence of the attempt to imitate it. Then the question is put, whether or not the operation of transfusion can be considered one of universal applicability.

Objections founded upon cases in which death soon results, the author treats with a certain amount of scorn, insinuating that intra-uterine injections of hot water may have led to air entering the uterine sinuses, falsely charged to the transfusion, or that similar injections of perchloride of iron may have given rise to an embolus, no blame attaching to the transfusion apparatus.

Nevertheless, he recognizes the importance of the objections urged against transfusion, and advises meeting them by simplifying the operation. The first step in this simplification consists in dispensing with blood, and employing an artificial substitute. The second consists in using an uncomplicated apparatus.

The chapter on the History of Transfusion is brief, but interesting, the earlier attempts indicating, what has since been apparently clearly proved, that the admission of a moderate amount of air into a vein cannot be regarded as necessarily fatal to the recipient. For, in all the experiments of Lower, in England, in 1665, the communication between donor and receiver was made by a number of quills, which were joined together after being connected with the "*Carotidal* arterie" of one dog and the "*Jugular* vein" of another—air of course, filling all the quills.

In the chapter on the Prospects and Indications of Transfusion nearly fifty *per cent.* of recorded cases are said to have recovered. This estimate, however, is founded upon a combination of several tables of statistics, which may have contained duplicates. Yet, even if a much smaller proportion of such operations were successful, it would warrant the attempt to save life by means of it.

The reading and experience of the author lead him to conclude that the direct method of transfusion is only applicable to a small number of cases, and only practicable with skilled assistance and hospital appliances. The causes of failure of the operation, he thinks, can all be obviated, and that its dangers "are not greater than those which attend venesection and other minor operations on the venous system." As illustrating the handicapping which a method is sometimes subjected to, he introduces the report of a case of *ante-partum* hemorrhage, under the care of Dr. Braxton-Hicks, which suggests—what further on he plainly states—that the fatal result was not due to the transfusion, but to an unwise obstetrical procedure. In contrast to this he cites a similar case of his own, where a conservative obstetrical management, combined with transfusion according to the plan he advocates, was followed by a rapid recovery. In this connection the course of the book is broken to admit a sensible argument in favour of the conservative treatment of cases of ante-partum hemorrhage, and by a somewhat intemperate opposition of Dr. Barnes and styptic intra-uterine injections of perchloride of iron.

The next and last chapter discusses the way to execute the operation of transfusion. Here, again, the difficulties and dangers of immediate transfusion come up and are dwelt upon in detail, and the conclusion, which is a matter of common experience, announced that this method is far from being generally feasible. The use of the blood of other species of animals, and of human blood the corpuscles of which have been disorganized, the author would reject as unsafe. Equally does he object to the employment of phosphate of soda, as recommended by Dr. Braxton-Hicks, to prevent fibrination. His preference is strongly in favour of the transfusion of a saline solution made as follows:—

Chloride of Sodium	50	grains.
Chloride of Potassium	3	"
Sulphate of Sodium	2.5	"
Carbonate of Sodium	2.5	"
Phosphate of Sodium (Na_3PO_4)	2	"
Water (100° Fahr.)	20	ounces.
Alcohol (absolute)	2	drachms.

The apparatus he prefers is a simple siphon with a suitable canula, and one or two other slight additions to adapt it to its object.

It will be seen from this analysis that our author is a person of positive convictions and equally positive assertions, while his experience is calculated to encourage testing the method he recommends. It certainly appears that the primary advantage of transfusion consists in the supply of a fluid of proper physical composition to fill the flaccid bloodvessels and give the heart something to act upon. If the whole volume of blood were lost, nothing but blood could fitly take its place. But when only a relatively small proportion has flowed off, a simple saline solution may be of great service. The author's apparatus also commends itself to the judgment, as meeting all the indispensable indications, without being of a complexity which would make mishaps probable.

So much for the matter of this book. The manner, as intimated already, is in the main attractive. There are some infelicities of expression, some inconsistencies of wording (as in his formula, which we have harmonized in quoting it), some abrupt transitions from one part of the subject to another which might be improved, and the end comes so suddenly that one is surprised, on turning the page, to find that he has reached it. Nevertheless, as a whole, this monograph is interesting as well as instructive, and it prompts the hope that the author may continue his study of the subject of transfusion, and, when the proper time arrives, give the medical public the result of his increased experience and more mature reflection.

C. W. D.

ART. XXXIII.—*A Manual of Chemical Analysis as applied to the Examination of Medicinal Chemicals. A Guide for the Determination of their Identity and Quality, and for the Detection of Impurities and Adulterations. For the Use of Pharmacists, Physicians, Druggists, Manufacturing Chemists, and Pharmaceutical and Medical Students.* Third edition, thoroughly revised and greatly enlarged. By FREDERICK HOFFMANN, A.M., Ph.D., Public Analyst to the State of New York, and FREDERICK B. POWER, Ph.D., Professor of Analytical Chemistry in the Philadelphia College of Pharmacy. 8vo. pp. 624. Philadelphia: Henry C. Lea's Son & Co., 1883.

THE volume before us has been greatly improved since the first edition was issued ten years ago. The great advances made in chemical science